

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Amendment of Part 15 regarding new requirements	)	ET Docket No. 04-37
and measurement guidelines for Access Broadband	)	
over Power Line Systems	)	
	)	
Carrier Current Systems, including Broadband over	)	ET Docket No. 03-104
Power Line Systems	)	
	)	

**OPPOSITION OF THE EDISON ELECTRIC INSTITUTE AND  
THE UTILITIES TELECOM COUNCIL TO THE PETITION FOR RECONSIDERATION OF  
ARRL, THE NATIONAL ASSOCIATION FOR AMATEUR RADIO**

Pursuant to sections 1.429 and 1.41 of the Federal Communications Commission’s (“FCC” or “Commission”) Rules, the Edison Electric Institute (“EEI”)<sup>1</sup> and the Utilities Telecom Council (“UTC”),<sup>2</sup> on behalf of their respective member companies, hereby submit this opposition (“Opposition”) to the Petition for Reconsideration of Second Report and Order (“Petition”) filed by ARRL, The National Association for Amateur Radio (“ARRL”).<sup>3</sup>

The ARRL rehashes many of the same arguments that it has raised before and that the FCC has already rejected. Specifically, the ARRL insists that BPL presents such a significant interference risk that interference must be prevented through *full time* notching of all the Amateur bands *ex ante* rather than by mitigating specific instances of interference *post hoc* by notching certain frequencies in limited areas. In addition, it again attacks the 40 dB extrapolation factor for BPL operations below 30 MHz that the FCC

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<sup>1</sup> EEI is the association of the United States investor-owned electric utilities and industry associates worldwide. Its U.S. members serve almost 95 percent of all customers served by the shareholder-owned segment of the U.S. industry, about 70 percent of all electricity customers, and generate about 70 percent of the electricity delivered in the U.S. EEI frequently represents its U.S. members before Federal agencies, courts, and Congress in matters of common concern.

<sup>2</sup> UTC is the international trade association for the telecommunications and information technology interests of electric, gas and water utilities and other critical infrastructure industries, including pipeline companies. Its members include investor-owned, municipal and cooperatively organized utilities.

<sup>3</sup> Petition for Reconsideration of Second Report and Order by ARRL, The National Association for Amateur Radio in ET Docket No. 04-37 (filed Dec. 20, 2011).

retained in the *Second Report and Order*. The rest of ARRL's Petition is a pointless criticism against everything else about the BPL rules, including the BPL database.

These claims are unsupported by any new evidence and are ultimately unavailing and internally inconsistent. For example, the ARRL repeatedly asserts that "Access BPL has proven ... to be a failed technology" but at the same time it repeatedly insists that the interference potential of Access BPL is substantial. ARRL cannot have it both ways, and in fact there has been no widespread interference from BPL, contrary to ARRL's assertions and consistent with the FCC's conclusions in the First Report and Order and affirmed on reconsideration that BPL does not represent a widespread interference risk. Moreover, the FCC's approach of mitigating BPL interference through notching individual frequencies rather than the entire Amateur band has been proven effective and has been enforced by the FCC. Finally, the BPL database is not on reconsideration in the *Second Report and Order* and continues to serve its purpose to promote the informal resolution of interference, even if some of the information that is posted by BPL operators needs to be corrected.

As a procedural matter, the ARRL's request for *full time* notching of the entire Amateur bands has been rejected before, and may not be raised again in response to the *Second Report and Order*.<sup>4</sup> The primary issue in the *Second Report and Order* -- the 40 dB extrapolation factor -- has been thoroughly explained, and the ARRL's arguments against it raise no new issues.<sup>5</sup> Accordingly, the FCC should deny the ARRL's Petition for Reconsideration on both procedural and substantive grounds.

**I. ARRL's Request for *Full-time* Notching of the Entire Amateur Band is Unnecessary to Protect Against Harmful Interference, and It is Procedurally Defective and Should Be Denied.**

Ever since the FCC proposed rules for Access BPL, the ARRL has been opposed to it and has

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<sup>4</sup> The Communications Act provides, as to petitions for reconsideration, that "no evidence other than newly discovered evidence, evidence which has become available only since the original taking of evidence, or evidence which the Commission or designated authority within the Commission believes should have been taken in the original proceeding shall be taken on any reconsideration." 47 U.S.C. § 405(a)(2).

<sup>5</sup> See *American Radio Relay League, Incorporated, v. Federal Communications Commission (ARRL v. FCC)*, 524 F.3d 227 (D.C. Cir. 2008)(remanding to the FCC the extrapolation factor for further explanation).

sought rules that would prevent its deployment or at least cripple it. Its Petition for Reconsideration is more of the same. The ARRL claims that the *only* way to protect the Amateur operations from interference is to prevent BPL operations in the entire Amateur bands.<sup>6</sup> This not-in-my-backyard (“NIMBY”) argument proceeds from a false premise that BPL is a significant interference risk.

The ARRL has presented no new facts that would justify reconsideration of the FCC’s previous decisions rejecting the relief that it now seeks here. It presents the same arguments and studies that the Commission considered and rejected in the *Second Report and Order*. The rhetoric is more strident, including claims that the Commission covered up BPL interference,<sup>7</sup> but the arguments are equally meritless.<sup>8</sup> That the FCC reached a different view than the ARRL does not make it wrong, and the FCC has sufficiently explained the basis for its conclusions.<sup>9</sup>

#### **A. Interference potential of BPL is low and manageable.**

The Commission has concluded that the interference potential of BPL is low, and that the risk can be managed through mitigation requirements, including but not limited to notching frequencies that cause harmful interference to local radio users.<sup>10</sup> This conclusion is supported by numerous studies, including

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<sup>6</sup> See ARRL Petition at 13, n. 33 (stating that “full-time notching of Amateur allocations is the only preventative solution that will allow BPL to function effectively while not causing interference to Amateur Radio stations.”)

<sup>7</sup> According to the ARRL, “[t]here was never any ‘balancing’ of the interference potential of BPL; there was simply the denial of that interference potential in order that the Commission could continue to represent to Congress and the current administration that it was and is doing everything it can to promote broadband rollout.” ARRL Petition at 4. Moreover, it goes on to falsely state that “[t]he Commission has not once successfully resolved documented BPL interference complaints.” *Id.*

<sup>8</sup> As the Commission explained, the ARRL’s video of the BPL deployment at Briarcliff was “not representative of the performance of a system operating in accordance with the set of rules we set forth for Access BPL systems,” because it was taken before the BPL operator had implemented the mitigation requirements under the rules and that FCC measurements taken subsequent to such implementation showed no interference. *Second Report and Order* at ¶32.

<sup>9</sup> *Id.* at ¶17, quoting comments by Current that “the record as a whole could plausibly have justified a range of regulatory responses...and that the Commission’s approach in the BPL Order -- enabling BPL to go forward subject to unprecedented notching and shut-down requirements, as well as the 40 dB/decade extrapolation factor -- all come well within that range.”

<sup>10</sup> *Amendment of Part 15 Regarding New Requirements and Measurement Guidelines for Access Broadband over Power Line Systems Carrier Current Systems, Including Broadband over Power Line Systems*, Report and Order, ET Docket No. 04-37, 19 FCC Rcd. 21265 at ¶¶23 and 41 (2004); *affirmed on reconsideration Amendment of Part 15 Regarding New Requirements and Measurement Guidelines for Access Broadband over Power Line Systems Carrier Current Systems, Including Broadband over Power Line Systems*, Memorandum Opinion and Order, ET

those of the FCC's staff; and through the successful resolution of interference complaints, all of which were by amateur operators and the ARRL.

In developing its rules, the FCC balanced the risk of interference against the public interest in the promotion of BPL. It could have imposed restrictions like those that ARRL requests, but it only extended such certain special protections to a limited number of operations and in certain areas. Moreover, the FCC expressly declined to extend these protections to Amateur operations.

As the FCC explained:

While some interference is possible at locations close to the power line, we believe that in the great majority of locations, interference will not occur to radio services because either propagation conditions limit the range of the Access BPL emissions or there is no licensed amateur station present and operating on the frequencies on which such emissions appear. We see no need to require an Access BPL operator to reduce emissions below the Part 15 limits where there is no potential for interference. In addition, we have required that a database of Access BPL systems be established to allow amateur operators to identify BPL operations in their area before the systems commence operation so that they have an opportunity to alert the BPL operator of their presence before the system is activated.<sup>11</sup>

**B. The FCC has fully explained its internal studies and the basis for its BPL rules.**

While the ARRL attempts to seize upon the FCC's internal staff studies to exaggerate the interference potential of BPL, the Commission explained that its internal staff studies were "of experimental systems that used early implementations of BPL equipment ... that do not appear to have complied with the new rules." Moreover, the FCC further explained that "information on other system implementations, particularly our work with the Manassas, VA system, showed different performance characteristics than the systems ARRL criticized." Finally, the FCC explained that the ARRL drew different -- and incorrect conclusions -- from the internal staff studies, which "merely reflect the views of the Laboratory engineers who performed the testing and analysis and which do not necessarily reflect the consensus view of other engineers, the management of the Laboratory or of OET."<sup>12</sup>

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Docket No. 04-37, 21 FCC Rcd. 9308 at ¶22 (2006),

<sup>11</sup> *Id.* at ¶51.

<sup>12</sup> *Id.* at ¶19.

In addition, the FCC further explained that there is significant variability in propagation below 30 MHz, which can result in an increase in the noise floor within a relatively short distance of the power lines.<sup>13</sup> The Commission explained that this variability in propagation from place to place depends on a variety of factors including ground absorption and conductivity, terrain, vegetation, and the presence of structures and other man-made objects, including additional power lines arrayed on pole/towers in the near field of emissions from a power line carrying Access BPL transmissions.<sup>14</sup> This variability, which the “ARRL largely ignores”<sup>15</sup> probably affected many of the ARRL’s own measurements as well as the studies that it cited in support of restricting BPL operations in the Amateur bands, particularly below 30 MHz.<sup>16</sup>

Conversely and more importantly, the FCC was “aware of these variabilities in this complex operating environment and to account for it, [it] adopted the additional provisions for mitigating harmful interference that are set forth in the rules. In addition, recognizing this variability, [it] did not base [its] assessment of interference potential on any standard performance factor, such as an attenuation rate by itself, but rather on the successful past performance of its existing standards and the availability of suitable approaches for managing the potential for harmful interference and correcting any harmful interference that may occur.”<sup>17</sup> While the ARRL claims that such variabilities should militate in favor of *full time* notching of the Amateur band, the Commission concluded differently and has offered a reasoned explanation that *full time* notching was not necessary in light of the effectiveness of its interference mitigation requirements.

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<sup>13</sup> *Id.* at ¶54.

<sup>14</sup> *Id.* at ¶35.

<sup>15</sup> *Id.* at ¶35.

<sup>16</sup> *See Id.* at ¶74, n. 183 (explaining that “[b]ecause OFCOM made its measurements for the purpose of showing the distance attenuation of BPL signals of the particular BPL signal source under test away from the power line carrying that BPL emitter, if there are other power lines also carrying BPL signals nearby, the test data may not be valid as the measurements may have been made at a point closer to, or overlapping with, another BPL signal source.”) See also Comments of Current at 6 (observing that OFCOM’s measurements were tainted because they were taken at a BPL-equipped substation adjacent to an open tract, in the open space, next to a low-voltage line running exactly parallel to the measurement path.)

<sup>17</sup> *Id.* at ¶35.

**C. The interference mitigation rules have been enforced by the FCC and have been proven effective.**

To its credit and contrary to the ARRL's claims of a cover-up, the FCC conducted measurements at the Manassas, VA BPL deployment over the course of two days at six sites that were chosen for their proximity to locations identified in the interference complaints filed by five amateur radio operators and drive-through monitoring of the system in test mode. Based on the measurements taken at two sites the FCC tested where emissions appeared to be the highest, the FCC found that the system was utilizing 20 dB notches or more to protect the 7 MHz amateur band. Thus, the FCC concluded that the Manassas BPL system was in compliance with the FCC's requirements, and it dismissed the complaints. Manassas was not alone; in addition, the FCC conducted other investigations at other BPL deployments, and it also dismissed the complaints from amateur operators in those cases, as well.

There is currently only one pending complaint at the FCC,<sup>18</sup> which the FCC appropriately cited in the larger context as showing that Access BPL operators are taking effective steps as contemplated in the *BPL Order* to avoid interference to amateur and other licensed services, including working with local amateur operators.<sup>19</sup> The effectiveness of the FCC's informal interference mitigation approach was also supported by numerous comments on the record. As the FCC recognized:

Arkados Group, Inc. (Arkados), the HomePlug Powerline Alliance (HomePlug) and Intellon Corporation (Intellon) argued that prompt case-by-case resolution of any actual interference complaints is the preferable solution to the issues underlying ARRL's objections, rather than adopting an "overly exclusive" new rule that could stunt the growth of new innovative technologies that hold great promise for broadband and smart grid applications. IBEC submits that it has not experienced any issues with licensed services that could not be addressed within the framework of the existing BPL rules.<sup>20</sup>

Given the success of the existing rules at resolving interference informally, the FCC should not adopt the

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<sup>18</sup> *Re: Interference Complaint: IBEC Access Broadband Over Power Line Systems* from ARRL to Kathryn Berthot, Chief, FCC Spectrum Enforcement Division, and Julius Knapp, Chief, FCC Office of Engineering and Technology (filed Dec 29, 2010). This complaint is particularly interesting because it was brought by the ARRL against one of the BPL operators that had cooperated with the amateurs by notching the Amateur band. The ARRL claims that the BPL operator has stopped notching. ARRL Petition at 11, n. 28.

<sup>19</sup> *Second Report and Order* at ¶57.

<sup>20</sup> *Id.* at ¶69, citations omitted.

restrictions that ARRL would heap upon BPL. In fact, the FCC found correctly that ARRL “provided no information ... that would warrant modification of the Access BPL rules to require notching of all amateur bands at notch depths of at least 35 dB, or otherwise provide additional protection for the amateur service.”<sup>21</sup>

**D. Increasing notch depth capability further protects against BPL interference, but fails to satisfy ARRL.**

Even though the FCC rejected *full-time* notching of the amateur bands, it did make several refinements to its Access BPL rules to further reduce the risk of interference, including among other things, modifying the rules to increase the required notch filtering capability for systems operating below 30 MHz from 20 dB to 25 dB. The FCC decided to increase the required notch depth capability despite objections by UTC and several BPL companies and despite the FCC’s conclusion that the ARRL’s comments “do not include any analysis [other than the ITU-R Report SM.2158] that shows that 35 dB or some other figure is the proper level of notching needed to protect amateur operations.”<sup>22</sup>

The FCC decided to require 25 dB notching capability because it would “provide protection for amateur mobile operations in more instances, while continuing to recognize the variability in emissions that limit the service to mobile amateur receivers.”<sup>23</sup> It also concluded that “the benefits of providing additional protection for licensed services outweigh any potential additional costs to BPL providers,” based on assertions on the record that “most BPL operators are already using notches of at least 25 dB,” and the FCC’s expectation that the cost imposed by this requirement would be “minimal or nil.”<sup>24</sup> Even

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<sup>21</sup> *Id.* at ¶43. See also *Id.* at ¶57 finding that BPL operators do have “a strong incentive to take a priori steps to ensure that they avoid causing interference to the local radio services, including amateurs,” and stating that “we have observed, as described by IBEC and CURRENT in their comments, that Access BPL operators are taking effective steps as contemplated in the BPL Order to avoid interference to amateur and other licensed services, including working with local amateur operators.”

<sup>22</sup> *Id.* at ¶44, citing ARRL *ex parte* comments filed Nov. 2010 (adding that the ARRL comments “rather simply state as their recommendations/requirements a notching depth that existing BPL equipment can meet.”)

<sup>23</sup> *Id.* at ¶42.

<sup>24</sup> *Id.* at ¶43. Note that the variability in propagation was also a factor in the FCC’s decision in the Order on Reconsideration to set a 20 dB notching capability requirement to protect mobile operations below 30 MHz. See *Id.* at ¶42, n. 104, citing BPL Order on Reconsideration at 9319-9320. See also *Id.* at ¶42 (reasoning that “the high

though the FCC did not impose the 35 dB notching capability requirement that the ARRL requested, it did explain that a 25 dB notching capability would sufficiently protect mobile operators, because a “5-dB increase in an Access BPL notch will leave a margin of approximately 15 dB above the residential background noise level,” according to NTIA estimates as supported by ARRL.<sup>25</sup> Thus, the FCC did provide limited relief in response to the ARRL’s requests, and it provided a reasoned analysis for its decision, which should further protect amateur operators from harmful interference.

Even though the FCC increased the notch depth capability, the ARRL is still unsatisfied. According to the ARRL, “[n]one of what the Commission refers to as ‘additional limitations’ on BPL systems relates to Amateur interference from BPL: The notching capability and frequency agility requirements are not required to be implemented --only the capability is required.”<sup>26</sup> Furthermore, it adds that “whether that notch depth is 25, 30 or 35 dB is not as important as mandating full time mandatory notching.”<sup>27</sup> Coupled with the ARRL’s conspiracy theories about FCC cover-ups, these statements conclusively prove that compromising with the ARRL is a wasted effort.

## **II. The FCC has Sufficiently Explained the Basis for Retaining the 40 dB Extrapolation Factor and Should Deny ARRL’s Reconsideration of It.**

In addition to increasing the notch depth capability, the FCC also proposed to reduce the extrapolation factor below 30 MHz in an attempt to compromise with the ARRL. In typical fashion, the ARRL rejected the compromise and insisted on a 20 dB extrapolation factor for operations below 30 MHz. Thus, the FCC concluded that, “[i]t is plain from the record that reducing the extrapolation factor to the more conservative 30 dB/decade level to compensate for those situations in which the actual

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variability of the noise floor at HF frequencies, where increases of as much as 20 dB or more are common,” leads to intermittent and unreliable mobile reception of relatively weak signals under 24 dB $\mu$ V/m, such that BPL interference at 24 dBu V/m could not be considered harmful interference to mobile operations).

<sup>25</sup> *Id.* at 43, n. 107. The FCC added that it did not find that an increase in the required notching capability to a level above 25 dB is needed to protect against interference to amateur or any other licensed services. To require that all systems adhere to a de facto industry 35 dB notching standard would unnecessarily constrain BPL operators, as stated by UTC, and equipment manufacturers who might choose to design for a different level of operation that would comply with the notching level we have determined will provide adequate protection.

<sup>26</sup> *See e.g.* Petition at 3, n. 5.

<sup>27</sup> *Id.*

attenuation is less than 40 dB/decade would not satisfy the concerns of any of the parties to this matter or otherwise provide any benefits that would improve our Access BPL measurement guidelines.”<sup>28</sup>

The FCC concluded that “there is no single ‘correct’ value for an extrapolation for RF emissions from power lines, and instead find that the compelling and reasonable solution is to use the existing Part 15 extrapolation factor that both has a scientific basis and has stood the test of time for a wide variety of devices and systems.”<sup>29</sup> In that context, it noted that “using the slant range method in performing measurements has the effect of reducing the extrapolation factor to approximately 20 dB,” and moreover that the extrapolation factor is “only one element in a comprehensive set of rules,” which ultimately “require that harmful interference be corrected under any circumstances.”<sup>30</sup>

To summarize the FCC’s rationale, the existing extrapolation factor need not be changed because it is scientifically based, and even if there was some doubt about its application to BPL, the slant range method of performing measurements moots the issue because it has the effect of reducing the extrapolation factor to approximately 20 dB. In any event, BPL operators must correct any instance of harmful interference, making the extrapolation factor a matter of secondary importance. Finally, the FCC reminded BPL operators that the extrapolation factor is to be used only in circumstances where there are high ambient noise levels or geographic limitations.<sup>31</sup>

On reconsideration, the ARRL has backed away from objecting to the 30 dB factor, stating instead that the extrapolation factor should be as close to 20 dB as possible.<sup>32</sup> Yet, it doesn’t argue for a 30 dB factor either, which can be considered an implicit acknowledgement that the slant range

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<sup>28</sup> *Id.* at ¶90.

<sup>29</sup> *Id.* at ¶71. *See also Id.* at ¶75 stating that “As UTC observes, the staff presentations merely included a 20 dB/decade extrapolation factor as one option among many for regulating BPL operations in the HF bands; the presentations did not find that a 20 dB extrapolation factor represented the actual rate of decay, nor did they contain any underlying information or analysis that would support such a finding.”

<sup>30</sup> *Id.*

<sup>31</sup> *Id.* at ¶92 (reiterating that the clarification it issued in the RFC/FNPRM that measurements of BPL equipment and systems should be made at the 30 meters distance specified in Section 15.209 unless circumstances such as high ambient noise levels or geographic limitations are present, in which case, a 3 meter or 10 meter horizontal distances indicated in the BPL measurement guidelines may be used.)

<sup>32</sup> *Id.* at ¶24.

measurement method does in fact render the issue moot and that BPL operators must correct interference in any event.<sup>33</sup> It just raises the same arguments in support of its view that a 40 dB extrapolation factor is wrong, not that a 30 dB extrapolation factor is right.

The Commission should reject reconsideration on this issue and affirm the 40 dB extrapolation factor for measuring operations below 30 MHz. This issue has become a red herring that deserves no further consideration. There is no scientific basis upon which to adopt a different extrapolation factor, and as a practical matter in this case, there is no reason to do so either. The 40 dB extrapolation factor is used for all other Part 15 operations, and nothing has drawn the extrapolation factor into question. The FCC has agreed that BPL does not behave like a point source emitter, but it disagrees that it be analyzed as a line emitter. Therefore, there is no reason at this point to establish an extrapolation factor for BPL that is different from the extrapolation factor for other unintentional radiators under the Part 15 rules.

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<sup>33</sup> *But see Id.* at ¶85 (Given that BPL measurements will be made close to the ground for the safety and practical reasons indicated above and the propagation characteristics that are likely to be present in ground environments, we therefore continue to believe that there is justification for presuming that the expected attenuation rate of measured emissions at frequencies below 30 MHz is greater than 20 dB/decade.)

**WHEREFORE**, the foregoing reasons, the Edison Electric Institute and the Utilities Telecom Council respectfully request that the Commission deny ARRL's Petition for Reconsideration of *Second Report and Order*.

Respectfully submitted

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Dated: July 17, 2012

## **CERTIFICATE OF SERVICE**

The undersigned hereby certifies that on July 17, 2012, I served the following parties on the attached service list by electronic mail.

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